

REMARKS

The Examiner has rejected Claims 1, 21 and 39 as being anticipated by Zaki. The Examiner appears to take the position that since Zaki states that the conductor resonators can have a cylindrical shape, but also a ring or doughnut shape, that Zaki therefore describes the use of cut resonators. It is respectfully submitted that that conclusion by the Examiner is wrong. A ring shaped resonator or doughnut shaped resonator is simply a cylindrically shaped resonator with an opening in a center thereof. The ring shape and doughnut shape are identical to one another and function in much the same manner as a cylindrically shaped resonator. Applicant is not aware of any reference in the prior art that would indicate that a ring shaped resonator is a cut resonator. Cut resonators are described in U.S. Patent No. 4,881,051 issued on November 14, 1989. There is no suggestion in Zaki that cut resonators be used to improve spurious performance. Zaki does suggest that composite ring resonators can be used to improve spurious performance. The alternate ring or doughnut shape resonator described in Zaki is not a cut resonator. The resonators described in Zaki all have a cylindrical shape. In Column 3, beginning at Line 42 through Column 4, ending at Line 61, the Zaki patent describes composite resonators as being formed by the combination of cavities 3, 5 and 7 and the conductor resonator elements to reduce the physical size of the composite resonator (i.e. the combination of the conductor resonator elements and the cavities) as compared to "empty" cavity resonators designed for the same resonant frequency. Even though cut resonators had been well known for some time, at the time that the application that forms the basis of the Zaki application was filed (i.e. 1996) there is no mention whatsoever in Zaki of using cut conductor resonators to further reduce the size or to further improve the performance. It is therefore respectfully submitted that the rejection of Claims 1, 21 and 39 based on Zaki should be withdrawn.

The Examiner has rejected Claims 1, 2 4 to 11, 19, 21, 22, 24 to 32, 36 and 39 as being anticipated by Salehi et al. The Salehi paper was published on or about June of 2001 and the present application has a priority date of December 11, 2000. The Salehi reference is therefore not prior art and the rejection should be withdrawn.

The Examiner has rejected Claims 2, 4 to 7, 12, 15, 18 to 20, 22, 24 to 27, 31, 32, 33, 36 and 37 as being unpatentable over Zaki in view of Nishikawa. It is respectfully

submitted that Zaki has been interpreted by the Examiner in an unreasonably broad manner as describing cut resonators when the Zaki patent clearly does not describe cut

submitted that Zaki has been interpreted by the Examiner in an unreasonably broad manner as describing cut resonators when the Zaki patent clearly does not describe cut resonators as known to those skilled in the art. The Nishikawa patent, which was issued on December 27, 1983, does describe cut resonators, but those resonators are dielectric resonators. In Column 3 beginning at Line 20, it is stated in the Nishikawa patent that when one sector 12b is removed, the other sector 12a still functions as a resonator. The Zaki patent refers to the resonators as being quarter sector resonators and half sector resonators at Lines 39 and 52 of Column 3. At Line 58, the Nishikawa patent uses the phrase V-cut sector resonator. In Column 4 at Line 2, the Nishikawa patent states that the base resonator can be any known type of resonator so long as the shape is symmetric about the center. A half cut sector resonator of Nishikawa is simply one half of a cylindrically shaped uncut resonator. The uncut or base resonator can be ring or doughnut shaped or it can be solid. The center of a ring shaped resonator is not a second cut portion. The cut resonator is that part of the base resonator that remains. Zaki does not teach the use of conductor resonators having a first cut portion and a second cut portion or any cut portion. Nishikawa does show quarter cut and half cut resonators but the cut resonators shown in Nishikawa are dielectric resonators. Nishikawa does not show a modified shape of a resonator having a first cut portion and a second cut portion. Figure 5 is simply a resonator having a semicircular shape and Figure 7 is simply a ring resonator having a semicircular shape.

The half cut resonator and quarter cut resonator of the present invention are half the size and one quarter the size respectively of the cylindrical base resonator. The size reduction achievable by using the cut resonators of the present invention is therefore much greater than the size reduction achievable by using a ring resonator in place of a cylindrical resonator. The Examiner states that it would have been obvious to modify the shape of the resonators of Zaki to be half cut or to have a first cut portion and a second cut portion as taught by Nishikawa. Nishikawa does not teach a first cut portion and a second cut portion. Nishikawa simply describes cut resonators and, as stated above, the resonators described in Nishikawa are dielectric resonators. They are not conductor resonators. The Examiner acknowledges again that Nishikawa does not disclose a motivation for the modification suggested by the Examiner. The Examiner states that

Zaki does disclose a suggestion for this modification. The Examiner states that the suggestion by Zaki would have been to provide a composite resonator capable of providing complex filter functions. Zaki already provides complex filter functions so what is the motivation to use cut conductor resonators? With due respect, that suggestion is not a motivation for the use of cut conductor resonators. As stated above, when Zaki refers to composite resonators, it means the combination of the cavity and the resonator and there is no suggestion whatsoever in Zaki to use cut resonators. Further, the Nishikawa patent teaches that the cut resonators must be in contact with a metallic surface. It is respectfully submitted that the Examiner is using hindsight to take the position that the present invention is obvious over Zaki and Nishikawa.

Further, the Examiner states that it would have been obvious to modify the shape of the cavities of the first embodiment of Zaki to be rectangular as taught by the third embodiment of Zaki. In the first embodiment of Zaki, cylindrically shaped resonators are used in cylindrically shaped cavities (Figure 1). In the second embodiment of Zaki, rectangular resonators are used in rectangular cavities (Figure 2). There is no suggestion in Zaki that one should use rectangular resonators in cylindrical cavities or vice versa. Again, it is respectfully submitted that the Examiner is using hindsight to take the position that the present invention is obvious in view of Zaki and Nishikawa. It is therefore respectfully submitted that the rejection based on Zaki in view of Nishikawa should be withdrawn.

The Examiner has rejected Claims 13, 14 and 34 as being unpatentable over Zaki in view of Nishikawa and Duong. The Examiner states that Zaki and Nishikawa in combination teach the use of conductor resonators that are cut resonators and have a modified shape with a first cut portion and a second cut portion. It is respectfully submitted, as set out in detail above, that Zaki teaches the use of conductor resonators. Nishikawa teaches the use of cut resonators, but the resonators of Nishikawa are not conductor resonators. The resonators of Nishikawa are dielectric resonators. While both Zaki and Nishikawa describe ring resonators, the ring resonator is well known and is not a modified shape having a first cut portion and a second cut portion. There is no motivation to combine the teachings of Zaki and Nishikawa and the suggestion relied upon by the Examiner does not provide any motivation to combine the teachings of these

two patents. The Applicant has made a significant invention and that invention should not be diminished or rejected on the basis of using hindsight or unreasonably attempting to combine the teachings of two references where there is no reasonable basis or motivation whatsoever in favor of the combination. The suggestion relied upon by the Examiner is, with all due respect, a very general statement that provides no motivation whatsoever to use cut conductor resonators. The Patent Office has not produced any prior art that shows the use of cut conductor resonators. Further, the Nishikawa patent teaches that the cut resonators must be in contact with a metallic surface.

The Duong patent does not disclose the use of cut resonators. It is respectfully submitted that it is not obvious to combine Zaki and Nishikawa to come up with the present invention and it is further not obvious that cut conductor resonators can be used in the coupling structure described in the Duong patent. For this reason, it is respectfully submitted that the rejection of Claims 13, 14 and 34 be withdrawn.

The Applicant has made numerous attempts to contact the Examiner by telephone in order to discuss the Office Action as the interpretation of the prior art by the Examiner appears to be extremely broad and unwarranted. Applicant will continue to try to reach the Examiner in order to better understand the Examiner's reasoning.

We are enclosing a one month extension of time fee by way of a credit card authorization. All of which is respectfully submitted.


Yours very truly,

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